How innovative is Naval Supply Systems Command?

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THESIS

HOW INNOVATIVE IS NAVAL SUPPLY SYSTEMS COMMAND?

by

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December 1998

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The purpose of this thesis is to assess the Navy supply system's movement toward an innovative organization. It compares the Navy's supply system to innovative organizations in the private sector. The purpose is to help DoD organizations gauge where they are now, note how far they have progressed, and plan where they have to go in the future to be innovative organizations. The Fleet and Industrial Supply Centers (FISCs) were chosen to represent Naval Supply Systems Command (NAVSUP) as a whole. FISC Yokosuka, FISC Norfolk, FISC Jacksonville, FISC Puget Sound, FISC San Diego and FISC Pearl Harbor were the organizations in the study. They completed a survey to determine the degree of innovativeness that exists in NAVSUP. The study concluded that the Naval Supply Systems Command is neither as innovative as private companies that have received accolades for innovativeness, nor as innovative as private companies that can be characterized as less or non-innovative.

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HOW INNOVATIVE IS NAVAL SUPPLY SYSTEMS COMMAND?

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requirements for the degree of

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ABSTRACT

The purpose of this thesis is to assess the Navy supply system's movement toward an innovative organization. It compares the Navy's supply system to innovative organizations in the private sector. The purpose is to help DoD organizations gauge where they are now, note how far they have progressed, and plan where they have to go in the future to be innovative organizations. The Fleet and Industrial Supply Centers (FISCs) were chosen to represent Naval Supply Systems Command (NAVSUP) as a whole. FISC Yokosuka, FISC Norfolk, FISC Jacksonville, FISC Puget Sound, FISC San Diego and FISC Pearl Harbor were the organizations in the study. They completed a survey to determine the degree of innovativeness that exists in NAVSUP. The study concluded that the Naval Supply Systems Command is neither as innovative as private companies that have received accolades for innovativeness, nor as innovative as private companies that can be characterized as less or non-innovative.

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I. INTRODUCTION

A. PURPOSE

One of Naval Supply Systems Command's (NAVSUP) values is to be "Innovative and Responsive." The idea is to "constantly explore new ideas and methods in order to increase our effectiveness" [NAVSUP, online]. NAVSUP envisions itself as an innovative organization that is focused on reinventing itself to satisfy its customers. This is characterized in their vision statement:

> We will transform today's infrastructure intensive supply system into a lean, process-driven system where a single action by the customer activates a global network of sources that delivers best value products and services. In short…"One-Touch Supply" [NAVSUP, online].

The Navy's supply system exists in constantly evolving internal and external environments. It is faced with force reduction, infrastructure "right-sizing" and budget constraints that require it to be nimble as it attempts to satisfy its numerous stakeholders. In addition to reacting to the ever-changing internal environment, the logistics system must react and adopt revolutionary technological and logistics process breakthroughs.

The purpose of this thesis is to assess the Navy supply system's movement toward an innovative organization. This assessment compares the Navy's supply system to innovative organizations in the private sector. Additionally, the purpose is to help DoD organizations gauge where they are now, note how far they have progressed, and plan where they have to go in the future to be innovative organizations. To accomplish its purpose, the study conducts a comparative analysis between the management of innovation in private companies with the organizations in the Navy's logistics system. It measures the perceptions of professional DoD logisticians and compares them with results from a study that quantified the perceptions of leaders in private companies that were recognized as innovative. By analyzing the differences and similarities, potential modifications to the Navy's supply system can be made to make the organization more innovative.

B. RESEARCH QUESTION

How innovative is Naval Supply Systems Command?

C. EXPECTED BENEFITS OF THIS THESIS

This thesis will benefit decision-makers in the Naval Supply Systems Command responsible for creating an innovative organization. The survey attempts to assess the level of innovation that currently exists in the organization. The research also identifies specific areas in the supply system that have succeeded in employing innovative technologies, products or processes. Thus, NAVSUP leadership will be able to determine the extent to which its innovation goals are being realized. If they desire, they then will be able to target specific changes required to close the gap (if one exists) between innovative private companies and Naval Supply Systems Command.

D. THESIS OUTLINE

The first chapter presents the research question and states the objectives, purpose and benefits of the study. Chapter II reviews the literature related to the management of innovation and summarizes findings derived from Dr. Wang's innovation research on private companies. The third chapter, the research methodology, presents the study's development, data collection, data summary, and data

analysis. The fourth chapter is a comparative analysis between innovative private firms and Navy Fleet and Industrial Supply Centers. The final chapter concludes with a summary of the findings, the limitations of the study, and recommendations for follow-on action.

II. LITERATURE REVIEW AND PROPOSITIONS

A. BACKGROUND

Innovation has become a critical factor in an organization's success. Moore, Sparrow, and Spelman state: "An innovation is any reasonably significant change in the way an organization operates, is administered, or defines its basic mission." They amplify on this definition by clarifying that

> Not all organizational changes qualify as innovations. Some are simply too small, obvious, or idiosyncratic to warrant much analytic attention. Those changes worth recognizing as innovations should be globally (or at least locally) new to the organization; be large enough, general enough, and durable enough to appreciably affect the operation or character of the organization; or be consciously designed or adapted as a response to a perceived problem by some level of the organization [Moore, Sparrow, Spelman 1992].

Scholars argue that public organizations must innovate because the government's standard operating procedures are proving inadequate and organizations need to find ways to improve their performance [Behn, 1997]. Public organizations also must justify their existence and defend the efficient use of resources. They must demonstrate that they provide value to customers. In an environment that is moving to private sector solutions through outsourcing, it

is imperative that remaining public organizations demonstrate their usefulness and viability. Innovations also can help public organizations keep pace with the technological and process improvements that are being accomplished in the marketplace.

Bacon and Butler created the concept of "Planned Innovation" (Figure 2-1) which makes a distinction between invention, innovation and "planned innovation."

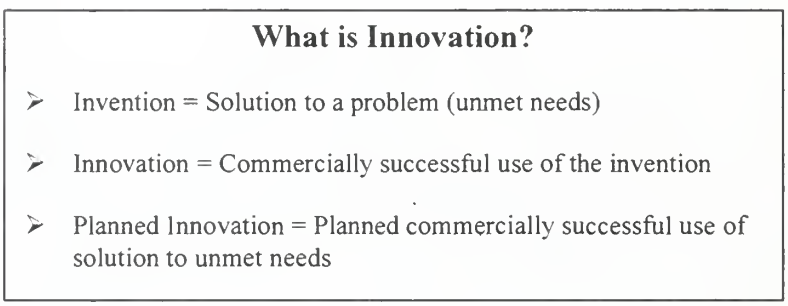


Figure 2-1. Planned Innovation.

"Planned innovation" directs a company's attention to better defining product requirements to meet customer needs; seeking ways to assure commercial success, rather than merely technical success; and finding ways to collect and analyze appropriate information and coordinate activities across multi-functional boundaries [Bacon and Butler, 1998]. Their argument is that the government needs to employ "planned innovation" to take commercially

successful innovations and apply them to non-defense specific processes in the government.

B. RESEARCH MODELS TO ANALYZE THE CHARACTERISTICS OF INNOVATIVE FIRMS

Although there has been a plethora of research done in the application of innovation in the study of organizational innovation, few have attempted to apply this research to public organizations. The literature review will outline three separate research approaches to identify the innovativeness of an organization. After a presentation of the three, one approach will be selected to frame this study.

1. The Minnesota Innovation Research Program

The framework of the Minnesota Innovation Research Program (MIRP) centers on five basic constructs: ideas, people, transactions, context, and outcomes. Figure 2-2 outlines the dimensions that are examined in the measurement properties of the Minnesota Innovation Survey (MIS). The dimensions are grouped into four clusters:

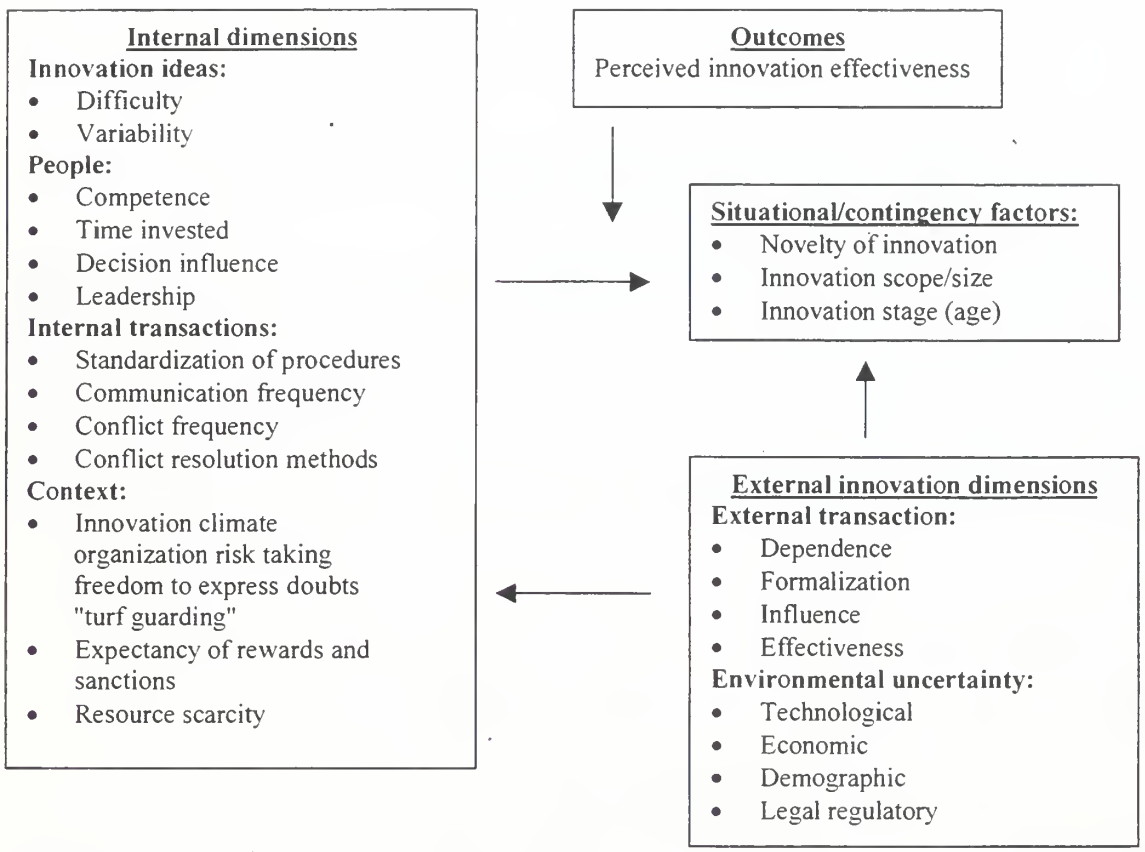
- The internal innovation dimensions all relate to the processes and context within the innovative organizational unit.

- The external innovation dimensions all pertain to the transactional and global environment of innovation unit and are evaluated separately from the internal innovation dimensions because they pertain to a different level of analysis.
- Perceived innovation effectiveness is used as the ultimate dependent criterion to assess the predictive and concurrent validities of the MIS internal and external dimensions.
- The situational/contingency factors were measured with other instruments (not the MIS) and are used to examine the basic contingency theory that underlies the MIS measurement model.

The objective of the MIS is to develop or test a substantive theory of innovation effectiveness. Van de Ven and Chu concluded that there was substantial evidence of construct validity of the Minnesota Innovation Survey [Van de Ven, 1989].

2. Barclay and Benson's Organizing for Product Innovation

Barclay and Benson's model focuses on the innovation as it pertains to a new product development organization. It is tailored on the McKinsey "7S" model popularized by



Source: Van de Ven, 1989.

Figure 2-2. Dimensions in Measurement Model of Minnesota Innovation Survey.

Peters and Waterman in 1982. The seven Ss are listed in Table II-I and graphically depicted in Figure 2-3. Within

their model, the "hard" Ss are strategy, structure and systems, and the "soft" Ss are staff, style, skills, and shared values. They constructed a survey and conducted structured interviews to identify specific characteristics of the seven Ss that maximize the success of new product innovation [Barclay and Benson, 1994].

3. Wang's Managerial and Organizational Factors in Industrial Innovation

Wang's model employed common attributes of innovative companies and attempted to verify them by contrasting them against non-innovative or less innovative companies. Wang defined innovative companies as those that were winners of

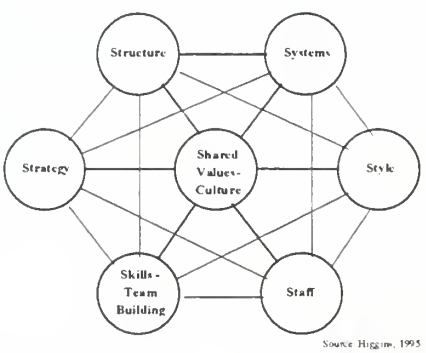
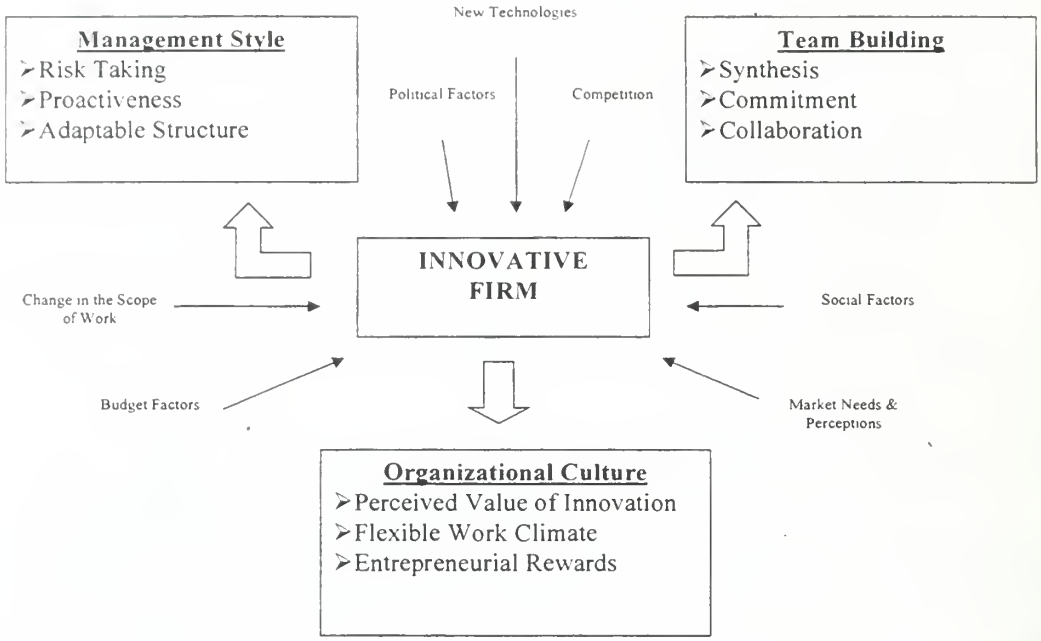


Figure 2-3. The Seven Elements of the New Product Development Organization.

the *Canada Award for Business Excellence* in the category of

innovation. The conceptual model of the three main factors of innovative companies is depicted in Figure 2-4. For management strategy, its related concepts are risk taking, proactiveness and adaptable structure. The organizational culture factor is defined as perceived value of innovation, flexible work climate and entrepreneurial reward system. Synthesis, commitment and collaboration define the third factor, team building.

In Figure 2-4, the arrows between the organization and the factors indicate the characteristics that describe and belong to innovative organizations. It is speculated that for firms that are not innovative, these factors will also help them to orient towards being more innovative. The model also describes the interaction between the firm and its external environment. The volatile environment of organizations can be ascribed to seven forces [Wang, 1990]. Although they are not equally dominant, each may play a major role in the management of innovation at any given time. They are: 1) new technologies, 2) competition, 3) political factors, 4) change in scope of work, 5) market needs and perceptions, and 6) budgetary factors, and 7) social factors.



Source: Wang, 1990.

Figure 2-4. Model of Innovation Management.

C. MODEL SELECTION

After a comprehensive review of these three models that characterize the elements of innovation in organizations, Wang's model of innovation management was chosen. It appears to be most suited to this study's investigation of the Navy's supply system. Table II-I summarizes the distinguishing features of each research study.

The survey associated with Wang's research posed questions that most closely related to the type of work conducted by the military, specifically the Fleet and Industrial Supply Centers. The Minnesota Innovation Survey focuses on a specific innovation. It is lengthy respondents must be involved in an innovation to accurately reply. Since the intent of this research is to provide a concise overview of the innovativeness of the organization in comparison to the private sector, the MIS does not support the goal of this thesis.

Barclay and Benson's research concentrated on the innovation of product development. Although the FISCs develop new services, the value of innovation that is defined by NAVSUP is one that is tailored to innovate to the customers needs. Barclay and Benson's survey was written for product development and does not match the innovative work being accomplished at the FISCs.

The comparative analysis between the perceptions of Navy logisticians and those of management in private industry requires statistical benchmarking to provide a basis for this study. Wang's research concentrated on the differentiation of the characteristics of innovation in innovative and non-innovative private organizations.

D. MODEL OF INNOVATION MANAGEMENT

Wang's model contains three scales that characterize organizational traits of an innovative organization. His research integrated the following elements in his analysis of innovative and non-innovative companies. Each scale contained three sub-scales. For management strategy, the sub-scales are risk taking, proactiveness and adaptable structure. The organizational culture scale consists of the perceived value of innovation, flexible work climate and entrepreneurial reward system. The third scale, team building is comprises synthesis, commitment and collaboration. This is a brief summation of the literature that relates to each element [Wang, 1990].

1. Risk Taking and Proactive Strategy

An innovative strategy answers the question "What is our business and what should it be?" [Drucker, 1974] Three factors that makeup an organization's strategy are its willingness to take risks, proactiveness and organizational structure. The following section outlines theories that relate to these innovative factors.

a. Risk Taking

Innovative firms actively promote risk taking and the pursuit of new ideas. In today's rapidly changing environment, decision-makers can't wait until they have complete information or have evaluated every alternative. They have to take risks; otherwise they will miss opportunities or fail to solve problems [Gamache, 1993]. Among the numerous values associated with risk taking are the following: freedom to try things and fail, acceptance of mistakes, freedom to discuss "dumb" ideas, absence of punishment for failure, ability to challenge the status quo, lack of attention to the past, willingness not to focus on the short term, the expectation that innovation is part of the job, a positive attitude toward change, and a drive to improve [O'Reilly, 1989].

Entrepreneurs are risk takers, but the perception that they carelessly bear risk is not accurate. Innovative organizations take measures to try to reduce, minimize, and/or eliminate risks [Robert and Weiss, 1988]. It is important that successful entrepreneurs understand when to avoid additional risk. Successful managers realize that, when a project is not yielding the desired results, it is

acceptable to abandon the project. Unsuccessful managers cannot abandon the project because of the hope of a "breakthrough" at some time in the future [Drucker, 1974]. Vaught and Hoy [1981] found the successful entrepreneur to be a "moderate" risk-taker.

b. Proactiveness

To achieve innovativeness, organizations must be focused and positioned to seize opportunities. They must continuously scan the external environment and be situated to move quickly. Proactiveness is a willingness of companies to seize situations and create opportunities.

Organizations must be able to aggregate, to evaluate, and to formulate into workable programs/services the new ideas that have been generated within the organization or imported from the outside. This is a challenge since the loosely structured, diversified, and competitive atmosphere designed for innovative behavior must coalesce with, the more highly structured, unified and controlled environment designed for rational behavior. [Rowe and Boise, 1973]

c. Structure

The innovative organization is characterized by structural looseness generally, with less emphasis on narrow, nonduplicating, nonoverlapping definitions of duties and responsibilities. Job descriptions are of a professional type rather than the duty type. Communications are freer and legitimate in all directions. Assignment of resource decisions are much more decentralized than is customary [Thompson, 1973].

An organic structure is better suited for rapidly changing environments because the uncertainty and resulting information needs of the organization are likely to be high. Table II-II shows that the organic structure enhances greater participation in decision-making and communication; it thus facilitates greater information gathering and processing [Zaltman et. al., 1973].

If the formal structure of a bureaucracy could be sufficiently loosened, it might be possible for organizations to restructure themselves continually in the light of the problem at hand. Thus, for generating new

Table II-I. Characteristics of Innovative Organizations: By Research Study.

Characteristics of Innovative Organizations	Research Studies		
	The Minnesota Innovation Research Program - Interior Dimension	Barclay and Benson's Organizing for Product Innovation (McKinsey "7S" Model)	Dr. Wang's Managerial and Organizational Factors in Industrial Innovation
Innovation Ideas			
Difficulty,			
Variability			
People			
Competence/Skills,			
Time invested,			
Decision influence,			
Leadership			
Internal Transactions			
Standardization of procedures,			
Communication frequency,			
Conflict frequency,			
Conflict resolution methods			
Context			
Innovation climate			
Organization risk taking			
Freedom to express doubts			
"turf guarding"			
Expectancy of rewards and sanctions			
Resource scarcity			
Strategy			
Structure			
Systems			
Staff			
Style			
Shared values			
Proactiveness			

ideas, for planning and problem solving, the organization would "unstructure" itself into a freely communicating body of equals. When it came time for implementation, requiring a higher degree of coordination, the organization could then restructure itself into the more usual hierarchical form, tightening up its lines somewhat [Thompson, 1965].

2. Culture

Organizational culture has been defined as "a pattern of basic assumptions invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration that has worked will enough to be considered valid, and to be taught to new members as the correct way to perceive, think and feel in relation to these problems" [Schein, 1985].

a. Shared Beliefs

In a study of twelve successful companies, Lorsch found that there exists among top managers a system of beliefs (a culture) that underlies successful strategic choices. These beliefs have been developed over many years of successful operation. As a top manager in one firm stated:

Table II-II. Mechanistic and Organic Organizational Structures.

Mechanistic	Organic
1. Tasks are broken into very specialized abstract units	1. Tasks are broken down into sub-units, but relation to total task of organization is much more clear
2. Tasks remain rigidly defined	2. There is adjustment and continued redefinition of tasks through interaction of organizational members
3. Specific definition of responsibility that is attached to individual's functional role only	3. Broader acceptance of responsibility and commitment to organization that goes beyond individual's functional role
4. Strict hierarchy of control and authority	4. Less hierarchy of control and authority sanctions derive more from presumed community of interest
5. Formal leader assumed to be omniscient in knowledge concerning all matters	5. Formal leader not assumed to be omniscient in knowledge concerning all matters
6. Communication is mainly vertical between superiors and subordinates	6. Communication is lateral between people of different ranks and resembles consultation rather than command
7. Content of communication is instructions and decisions issued by superiors	7. Content of communication is information and advice
8. Loyalty and obedience to organization and superiors is highly valued	8. Commitment to tasks and progress and expansion of the firm is highly valued
9. Importance and prestige attached to identification with organization itself	9. Importance and prestige attached to affiliations and expertise in larger environment

Source: Zaltman et. al., 1973.

> It is a closed loop. You make the argument that in the beginning of the company, the founders wanted to make certain products, which in turn led to our way of managing, which reinforced our products. It all hangs together. It isn't the result of any intellectual process, but it evolves. The pattern of principles which emerge out of a lot of individual decisions is totally consistent, and it is a fabric which hangs together and leads to success. [Lorsch, 1986]

When workers share a common belief system that failures are allowed and sometimes expected and that change is encouraged and expected, the likelihood of innovative activity taking place is greatly enhanced [O'Reilly, 1989].

b. Climate

One of the incentives for enterprise stems from an organization's "climate of success;" this is less tangible and more difficult to measure. First, there is emotional and value commitment between person and organization; people feel that they "belong" to a meaningful entity and can realize cherished values by their contributions. There is a sense of uniqueness and joint-ness that is supported by a feeling of being a member as much as being an employee. Hence, there is usually more innovation in organizations with more job satisfaction and with less "stratification" (with fewer hierarchical

distinctions that carry sharply differentiated rewards) [Kanter, 1983].

c. Reward System

The reward system can assist or hinder in the development of innovative products or services. Thompson wrote,

> The extrinsic reward system, administered by the hierarchy of authority, stimulates conformity rather than innovation. Creativity is promoted by an internal commitment and by intrinsic rewards for the most part. The extrinsic rewards of esteem by colleagues, and the benevolent competition, through which it is distributed, are largely foreign to the monocratic, production-oriented organization. Hierarchical competition is highly individualistic and malevolent. It does not contribute to cooperation and group problem solving [Thompson, 1973].

Incentives in the private sector are attached to profitability and the bottom line. Managers are selected, trained and nurtured to produce a situation that can yield corporate profits. If the manager is successful, he is compensated. Competition in public organizations is more electoral in nature. New ideas are not sought after because of the intense scrutiny of the media. Additionally, most public sector organizations are monopolists, and have little incentive to stimulate innovation. Managerial rewards for success are rare. The message of this reward system is to minimize the risk of

failure rather than to optimize performance [Altshuler and Zegans, 1990]. To encourage an entrepreneurial worker to take the additional risks that are required to formulate an innovative product or service, the resulting payoff must be established.

3. Team Building

To achieve innovativeness the top management must be committed to support the project. A climate conducive to synergistic creativity is not the result of one corporate statement. The organization must be aware of its desire to produce innovative ideas/products/services and act comfortably within that climate. Public organizations have several obstacles to innovation in this regard. An example of this is entrenched middle managers. Zegans states that the hierarchy and "rigid boxes" (rules) of the hierarchy stifle initiative without contributing to efficiency or accountability. [Zegans, 1992]

a. Synthesis

To optimize innovative endeavors, mutual coordination and communication cannot be overemphasized. Specifically, top management executive champions and

intrapreneurial teams must adopt a corporate attitude of teamwork committed to the success of the organization [Wang, 1990].

b. Commitment

Complete commitment to the organization does not promote innovation; neither does complete alienation from the organization. The relationship between personal and organizational goals, ideally, would seem to be where individuals perceive the organization as an avenue for professional growth.

> The interest in professional growth provides the rising aspiration level needed to stimulate search beyond the first-found satisfactory solution, and the perception of the organization as a vehicle for professional growth harnesses this powerful motivation to the interest of the organization in a partial fusion of goals, personal and organizational [Blau and Scott, 1962].

c. Collaboration

The innovative organizational unit must be an integrative grouping of various professionals engaged upon an integrative task requiring a high degree of technical interdependence and group problem solving. Ideally, individuals would have project assignments rather than continuing assignments [Thompson, 1965].

E. PROPOSITIONS

The underlying assumption of Wang's research was that the management of innovative organizations required an orientation and culture to motivate and support intrapreneurs in guiding their firms for growth and effectiveness [Wang, 1990]. Three major factors where formulated as a set of three hypotheses, and each hypothesis was further divided into three parts. The following section lists the propositions that this thesis pursues. They are based on Wang's hypotheses. The propositions are also summarized in Table II-III.

Proposition I: Innovative companies have a more pronounced entrepreneurial management strategy than less innovative companies.

Prop Ia Risk taking: Management of innovative companies takes more risks than management of less innovative companies.

Prop Ib Proactiveness: Management of innovative companies adopt a proactive strategy that anticipates the

need for change and new opportunities as compared to the reactive strategy in less innovative companies.

Prop Ic Commitment: Management of innovative companies have a higher level of commitment to intrapreneurial activities and innovation than the management of less innovative companies.

Proposition II: Innovative companies have a more organic group-oriented structure than less innovative companies.

Prop IIa Flexibility: Innovative companies have a higher level of flexibility in their structure than less innovative organizations.

Prop IIb Synthesis: Innovative companies have more integration and intermingling of talents in teams and task forces than less innovative companies.

Prop IIc Collectivity: Innovative companies have a more pronounced group and collective orientation than less innovative companies.

Proposition III: Innovative companies will more open, promotive, and collegial climate with a corresponding reward system than less innovative companies.

Prop IIIa Open climate: Innovative companies are characterized by a more open and promotive climate than less innovative companies.

Prop IIIb Collegial climate: Innovative companies are characterized by a more collegial climate than less innovative companies.

Prop IIIc Reward system: Innovative companies reward entrepreneurial behavior more than less innovative companies.

F. SUMMARY

A large body of work has been written concerning innovation in public and private organizations. In this research, Wang's research model is be applied in this research to identify innovativeness in public organizations. By conducting a comparative analysis

between innovative private organizations and public organizations, we can ascertain to what extent the public organizations have progressed toward being innovative organizations.

Table II-III. Proposition Comparison between Innovative and Less Innovative Organizations.

Prop.	Dimensions	Less Innovative Organizations	Innovative Organizations
P1	Entrepreneurial Management Strategy	Less	More
[P1-1]	Risk Taking	Less	More
[P1-2]	Proactiveness	Reactive	Proactive
[P1-3]	Organization Structure	Mechanistic	Organic
P2	Organizational Culture	Administrative	Entrepreneurial
[P2-1]	Beliefs and Values	Efficiency	Innovation
[P2-2]	Work Climate	Rigid	Flexible
[P2-3]	Reward System	Traditional	Results Oriented
P3	Team Building	Individualistic	Integrative
[P3-1]	Synthesis	Functional	Intermingling
[P3-2]	Commitment	Short-term	Long-term
[P3-3]	Collaboration	Unilateral	Mutual

Source: Wang, 1990.

III. METHODOLOGY

A. INTRODUCTION

This is a replication of a previous study [Wang, 1990] using public organizations instead of private businesses. The original study compared innovative and non-innovative private companies. This study compares innovative and non-innovative private companies with public organizations.

In Wang's study, companies were judged to be innovative because they were medallists in the Innovation Category of the *Canada Awards for Business Excellence*. A second group was randomly selected from the *Financial Post 500*. It represented less innovative companies. One or two senior executives at each company completed a questionnaire to participate in Wang's study. Fourteen innovative companies and twenty less innovative companies responded.

B. SAMPLE

An attempt was made to duplicate the original survey conditions. The FISCs are under the direct command of Naval Supply Systems Command and were chosen to represent NAVSUP as a whole in this study. Six FISCs were identified: FISC Yokosuka, FISC Norfolk, FISC Jacksonville,

FISC Puget Sound, FISC San Diego and FISC Pearl Harbor. In the correspondence (see Appendix A) that tasked each FISC, it was requested that "priority should be given to respondents that have recently been involved with a project of an innovative nature." The sample was thus increased and included logisticians who work at the FISCs. The Executive Officer at each FISC was instructed to identify 20 members of the organization who were familiar with the services provided by the organization and its external environment; they filled out the survey.

Table III-I summarizes the responses that were returned from each organization.

Table III-I. Responses to Survey.

Organizations	Number Requested	Received	Per cent
FISC Yokosuka	20	0	0%
FISC Norfolk	20	11	55%
FISC Jacksonville	20	17	85%
FISC Puget Sound	20	11	60%
FISC San Diego	20	9	45%
FISC Pearl Harbor	20	16	80%
Total	120	64	53%

After numerous attempts to facilitate completion of the survey, FISC Yokosuka submitted one survey via mail six weeks after the submission deadline. It is not included in

the analysis. Six surveys were rejected due to response bias-- every response on the survey was identical. Survey data entry was completed and all entries were screened for accuracy. All data entry errors were corrected.

C. SURVEY

Respondents were asked their perceptions of organizational strategy, culture and cohesion. Appendix B is a copy of the survey. The survey consisted of six sections: i) instruction sheet, ii) information on organization parameters, iii) questions related to management strategy [Proposition 1], iv) questions related to organizational culture [Proposition 2], v) questions related to team building [Proposition 3], and vi) comment sheet. All questions were in multiple choice format. For sections ii) to iv), a five point Likert type scale was used (1 = strongly agree; 5 = strongly disagree).

The survey used for this thesis was based on a modification of the one used by Dr. Wang. The questionnaire was modified to emphasize the development of services instead of products. Four questions were modified to include the idea that FISCs might be making innovative changes to services. So, "product" became

"product/services" in those four questions. Four of the questions in Part A were deleted because they either did not apply to the FISCs or the information could be determined by other means. Two questions were deleted because they referred to sales levels; two other questions were deleted that asked the organization's age and industry sector. Prior to dissemination, the complete questionnaire was evaluated for clarity and brevity. The total time needed to fill out the survey was estimated to be no more than half an hour [Wang, 1990].

The following are examples of the questions; one from each of the nine sub-scales:

Risk taking: Top managers at our organization are inclined to take business-related risks, that is, making bold decisions despite the uncertainty of their outcomes.

Proactiveness: With respect to technological innovation, our organization generally practices proactive planning (as opposed to reactive).

Commitment: Our organization's commitment to new innovative services is both enduring and consistent, that is, it is maintained through periods when funding is constrained.

Flexibility: Top management of our organization adapts to changing circumstances without too much concern for past practices and principles.

Synthesis: Our organization lacks integration of entrepreneurial, managerial, and technological roles (or skills).

Collectivity: The innovations at our organization are based more on teamwork than individual activities.

Openness: Our organization encourages self-motivated, achievement-oriented intrapreneurs to work in "uncharted waters" and experiment freely.

Collegiality: Our organization provides an open work environment by stressing colleague-based rather than boss-subordinate relationships.

Rewards: Our organization gives team rewards and considers them more important than rewards for individual team members.

D. SURVEY ADMINISTRATION

NAVSUP approved dissemination of the survey to the six FISCs. The Executive Officer of FISC Norfolk requested that the other five FISCs complete twenty surveys and submit them via e-mail to cfweiss@nps.navy.mil (see

Appendix B). A total of two weeks was assigned for the collection. Numerous follow-ups were conducted by phone to remind those organizations that had not returned the questionnaire.

IV. SURVEY RESULTS

A. SURVEY PERFORMANCE - RELIABILITY

Statistical analysis was conducted out using SPSS/PC+ (V8.0). Internal consistency reliability was compiled using Cronbach's alpha. The value of alpha depends on the number of items that make up the scale and the correlation between them. The greater the number of items, and the greater the correlation between the items, the higher the alpha value, and the higher the internal consistency of the scale [Frude, 1993]. Table IV-I summarizes the survey's Cronbach alphas in comparison with Wang's survey. Cronbach alphas for this survey were computed using Wang's final sub-scale items. During reliability and factor analysis, Wang eliminated the following items from the analysis:

[P1-2] item 9: time period for entrepreneurial initiatives to obtain support and resources from top management

[P1-3] item 13: adaptation of top management to changing circumstances without concern for past practices and principles

[P2-1] item 20: willingness of intrapreneurs to put their reputation and career on the line in order to pursue new opportunities

[P2-3] item 29: the importance and distribution of team rewards

[P3-1] item 32: human resources based more on the response to different conditions than on the result of a consciously planned organizational process

[P3-2] item 38: investments in innovative projects do not need to show a short-term return

[P3-3] item 43: interaction of functional specialists and product/service managers

Table IV-I. Reliability Analysis of the Nine Scales.

Scales	Items	Wang's Cronbach Alpha	Survey Cronbach Alpha
Management Strategy:			
[P1-1] Risks	1+2+3+4+5	0.8232	0.8559
[P1-2] Proactive	6+7+8+10	0.7868	0.8066
[P1-3] Organic	11+12+14+15	0.8529	0.8428
Organizational Culture:			
[P2-1] Beliefs	16+17+18+19	0.6687	0.7377
[P2-2] Climate	21+22+23+24+25	0.8829	0.8199
[P2-3] Rewards	26+27+28+30	0.8531	0.6757
Team Building:			
[P3-1] Synthesis	31+33+34+35	0.7413	0.7695
[P3-2] Commitment	36+37+39+40	0.8625	0.8298
[P3-3] Collaboration	41+42+44+45	0.7608	0.8259

B. DESCRIPTIVE STATISTICS

A total of five multiple-choice questions were posed in the background section of the survey. In order to examine the composition of the sample regarding a number of organizational parameters, frequency analysis was used to produce the required tables.

1. ORGANIZATION SIZE

Table IV-II shows the breakdown of the size of the organizations. In Wang's survey, over half of the companies sampled employed over 5000 employees. His sample was targeted at companies with annual sales in excess of $100 million. The FISC survey respondents indicated that a majority of their organizations had greater than one thousand employees (>79%).

Table IV-II. Number of Employees.

Employees	Responses - FISC Survey	Responses - Wang Survey
Missing value	1 (2%)	1 (3%)
200 to 499	2 (3%)	1 (3%)
500 to 999	9 (16%)	5 (15%)
1000 to 1999	17 (29%)	3 (9%)
2000 to 5000	14 (24%)	4 (12%)
Over 5000	15 (26%)	20 (59%)

Percentages may not add up to 100% due to rounding

2. ANNUAL OPERATING BUDGET

Table IV-III displays the annual operating budget of the FISCs surveyed. The majority of the FISCs have an

Table IV-III. Operating Budget of FISCs.

Annual Operating Budget	Responses - FISC Survey
Missing value	5 (9%)
Less than $1M	3 (5%)
$1M to $5M	5 (9%)
$5M to $10M	1 (2%)
$10M to $15M	4 (7%)
Over $15M	40 (69%)

Percentages may not add up to 100% due to rounding

annual operating budget in excess of fifteen million dollars. Wang's sample was targeted at companies that had more than $100 million dollars in annual sales. Thirty-two

percent of Wang's sample had between one and five billion dollars in annual sales. The FISCs are much smaller in fiscal terms than their private sector counterparts.

3. GROWTH RATE

Table IV-IV displays the comparative growth rates of the FISCs versus Wang's sample of private companies. In

Table IV-IV. Annual Growth Rate

Annual Growth Rate	Responses - FISC Survey	Responses - Wang Survey
Missing value	3 (5%)	2 (6%)
Over -10%	8 (14%)	0 (0%)
-10% to -5%	6 (10%)	0 (0%)
-5% to 0%	26 (45%)	0 (0%)
0% to 5%	9 (16%)	13 (33%)
5% to 10%	3 (5%)	10 (35%)
Over 10%	3 (5%)	9 (26%)

Percentages may not add up to 100% due to rounding

Wang's survey, all of the companies had positive growth. Twenty-six percent of the companies achieved a growth rate in excess of ten percent. The responses from the FISCs are indicative of the cuts that have been carved out of the defense infrastructure as a result of the "peace dividend" and the subsequent reduction of the defense budget. As a result, more than sixty-five percent of the respondents

replied that their organizations have experienced negative annual growth over the past five years.

4. NEW SERVICES

Table IV-V displays how many successful new products/services (i.e., those involving changes resulting from development work) that the organizations have introduced in the last two years. The distribution of responses was virtually identical across the two samples. Both samples indicated that the majority of their organizations had instituted between three and seven innovative services and/or products during the last two years.

Table IV-V. New Services Provided

New Services Provided	Responses - FISC Survey	Responses - Wang Survey
Missing value	8 (14%)	0 (0%)
0 to 2	18 (31%)	13 (38%)
3 to 7	29 (50%)	16 (47%)
8 to 15	1 (2%)	1 (3%)
16 to 30	0 (0%)	2 (6%)
Over 30	2 (3%)	2 (6%)

Percentages may not add up to 100% due to rounding

5. TYPES OF CHANGES TO SERVICES/PRODUCTS

Table IV-VI summarizes the perceptions of the respondents on the magnitude of the innovative change made

Table IV-VI. Types of Changes to Services/Products.

Changes to Services/Products	Responses - FISC Survey	Responses - Wang Survey
Missing value	7 (12%)	1 (3%)
Minor	8 (14%)	10 (29%)
Minor & Major	27 (47%)	16 (47%)
Major	16 (28%)	7 (21%)

Percentages may not add up to 100% due to rounding

as a part of the developmental work on new products or services. Similar to the distribution of the responses received for how many successful new innovations both groups produced, public and private organizations in these two samples responded similarly in relation to the type of changes made to their deliverables. Sixty-nine percent of respondents to Wang's survey replied that the changes made were divided between those of a minor change and those of a major change or mostly of a major change. Seventy-five percent of FISC respondents responded similarly. The perceptions of the two samples are very similar as they relate to the number of innovations produced and the degree

of change that is incorporated into the new product or service.

C. CORRELATIONAL ANALYSIS

Correlational analysis was used to examine the relationships among sub-scales and scales, and then to make inferences about relationships between constructs. Table IV-VII through Table IV-XI shows the Pearson correlation coefficients. The sub-scales are positively and significantly correlated with each scale with the exception of [P1-3], organic. The individual sub-scales are also positively and significantly related to each other regardless of the scale with which they are combined. This suggests that all of the three constructs are strongly interrelated. This mirrors Wang's findings on private companies. The correlation coefficients in his research show values of over 0.70 among the three scales [Wang, 1990].

The composition of the sub-scales was consistent with Wang's scaling; this to ensures that any differences are variation differences in responses rather than scaling. Items B9, B13, C20, C29, D32, D38, and D48 were omitted.

A low score on a survey item indicates that the respondent perceives that the organization exhibits behavior or possesses a characteristic that is conducive to innovation. For example, in the risks sub-scale, item nineteen poses the question, "Top management is committed to innovative activities to the extent that mistakes and failures are expected." If the respondent strongly agreed, they would select response number one. When the descriptive statistics of the survey are compared against the means of the innovative group in Wang's research, it is apparent that the means are lower in the group of innovative private companies.

D. FACTOR ANALYSIS

Any multivariate technique requires a number of subjects per variable, ideally ten [Nunnally, 1978], although common practice frequently uses five or six subjects per variable. An inadequate number of subjects allows the technique to capitalize on error variance that are unlikely with independent, small samples. Because there are only 1.3 subjects per variable, the results of this factor analysis are likely to be unstable.

With the understanding that some instability is expected, factor analysis was used to examinee the validity of Wang's model of the management of innovation as it applies to public organizations. The sub-scale intercorrelations indicate that there might be fewer distinctions across the scales than the model had classified. To investigate this observation, factor analysis was conducted on all of the variables, internal to each scale, and amongst the sub-scales.

First, all of the items were factor analyzed using SPSS. This resulted in the extraction of twelve poorly defined components. The first component extracted had an initial Eigenvalue of 14.865, which accounted for 33.0% of the variance. The second component extracted had an initial Eigenvalue of 4.08, which accounted for 9.1% of the variance. Factor analysis was completed a second time with all the items since it was not identifying the scales or the sub-scales. During this iteration the analysis was constrained to extracting only two components. The results are summarized in Table IV-XII. This tentatively suggests that this data can be broken into two factors: organic and innovativeness.

Second, the sub-scales were tested. The first sub-scale, [P1] produced 3 factors. The second sub-scale, [P2] produced 5 factors, and the third sub-scale [P3] yielded 4 factors. In the first sub-scale, item B8 was removed because it was double loading, and factor analysis was run to generate 3 factors. This resulted in the data displayed in Table IV-XIII. The first sub-scale split into two factors that can be characterized as a combination of the risks and proactive sub-scales and the organic sub-scale. In the second scale, organizational culture, items C16 and C20 were removed because they were double loading, and factor analysis was run to generate 3 factors. This resulted in the data displayed in Table IV-XIV. The second scale split into three factors (or sub-scales). One factor included all of the items in the beliefs and climate sub-scales. The other two factors that were extracted consisted of one item each that both pertained to the rewards sub-scale. In the third scale, team building, item D31 was removed because it was double loading, and factor analysis was run to generate 3 factors. This resulted in the data displayed in Table IV-XV. The third scale did not split into factors. The entire scale extracted virtually

all of the items. This also suggests that there were only two factors being extracted from the survey data.

Thirdly, factor analysis was conducted on the 9 sub-scales to show whether or not they were targeting different concepts related to innovation. SPSS produced Table IV-XVI when requested to extract 2 factors. The two factors could be labeled organic (now [P1-3]) and innovativeness (a consolidation of all remaining sub-scales).

Thus, the factor analysis offers some support of Wang's model. However, due to the small N and the instability of the factor analysis under these conditions, future studies are required to verify the factor structure.

E. RESULTS RELATED TO THE PROPOSITIONS

To determine whether or not the three Group means were equal, a one-way between-subjects ANOVA was conducted. The null hypothesis was H_o: $\mu_1 = \mu_2 = \mu_3$ (where μ_n is the Group mean). If the null hypothesis was rejected and the means were not equal, then a follow-on Student's t-test was conducted to determine if there was a significant difference between the sub-scale means in the FISC survey and the sub-scale means in Groups I and II.

The results of the F test are summarized in Table IV-XVII. The null hypothesis was rejected in 3 of the 9 sub-scales because the probability of obtaining means as disparate as the ones obtained in the sample was less than 5% [Linton, 1975]. For the risks, rewards and commitments sub-scales a t-test was required.

Three t-tests were conducted to test the significance of differences between the three pairs of mean differences involving innovative companies, less innovative companies and the FISCs. To test the hypothesis that, in the population, the two means are equal the following statistic was calculated:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{S_1^2/N_2 + S_2^2/N_2}}$$

The $\overline{X}_1$ symbol represents the sample mean of Group I, S_1^2 the variance, and N_1 the sample size. The observed significance level associated with this statistic is the probability that a difference at least as large as the one observed would occur if the two population means (μ_1 and μ_2) are equal. If this probability is small enough, less than 0.05, the hypothesis that the population means are equal is rejected [Norusis, 1982].

Wang's revised items were used to construct the sub-scales. Table IV-XVIII and Table IV-XIX contain the output results of the two-tailed t-tests. Three of the nine scales were found to have significant differences at the .05 level when compared with innovative companies. Only one of the nine scales was found to have a significant difference when compared with non-innovative companies. The following sections cover the t-tests as they relate to each proposition.

1. T-TEST RESULTS RELATED TO PROPOSITION ONE

The first proposition Wang [1990] proposed was that innovative firms have a more pronounced entrepreneurial management strategy as defined by risk taking, proactiveness and organizational structure, than less innovative firms. His data yielded a significant difference for risk taking. Table IV-XIX shows that risk taking was the only sub-scale that significantly differentiated FISCs from Wang's less innovative firms ($t=2.06$, $p=0.04$). Figure 4-1 graphically depicts the comparison between the mean responses of innovative firms (Group I), less innovative firms (Group II), and the FISCs (Group III).

2. T-TEST RESULTS RELATED TO PROPOSITION TWO

Wang's [1990] second proposition in his conceptual model is that companies would foster an entrepreneurial culture as described by their beliefs and values, work climate and reward system. In this survey, only the rewards sub-scale was significantly different from the innovative group of companies (Table IV-XVIII, $t=2.72$, $p=0.01$). Since the data from the survey on the beliefs and climate sub-scales showed some differentiation (for beliefs $t=0.87$, $p=0.39$ and for climate $t=1.37$, $p=0.18$), the total for the organizational culture scale approached being significantly different than the mean responses from innovative companies ($t=1.82$, $p=0.07$).

3. T-TEST RESULTS RELATED TO PROPOSITION THREE

Wang's [1990] third proposition predicted that innovative companies stress team building as evidenced by the mutual impact on and by top management, sponsors and intrapreneurs. The results from Table IV-XVIII indicate that the team building scale as a whole, and two of the three sub-scales significantly different than the mean responses of innovative firms. The synthesis sub-scale was

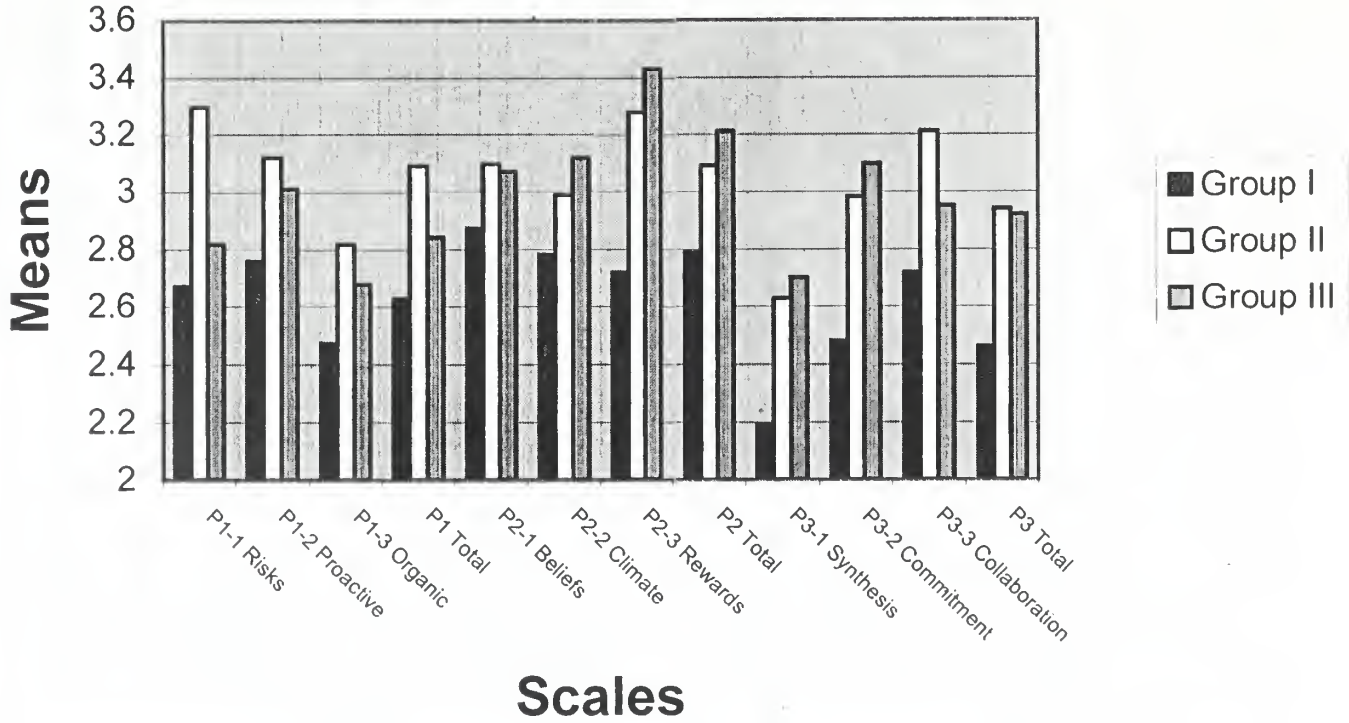


Figure 4-1. Comparison of Means between Groups I-III.

significantly different than the mean of innovative firms (t=2.38, p=0.02). The commitment sub-scale was also significantly different than the mean of innovative firms (t=2.84, p=0.01). The result of the strong differentiation of these two sub-scales combined with a slight differentiation of the collaboration sub-scale (t=1.01, p=0.31) caused the team building scale to be significantly different than the same scale for innovative firms (t=2.23, p=0.03).

The mean responses of the FISCs in the organizational culture and the team building scales are significantly different than those of innovative firms. These responses are more correlated with the responses of less innovative firms. In Figure 4-1, it is apparent that the mean responses of the FISCs (Group III) are more closely related to those of the less innovative firms (Group II) than those of the innovative firms (Group I). In four of the six sub-scales in the organizational culture and team building scales, the mean FISC response exceeds the mean response for the less innovative firms.

Only in the risks sub-scale of the management strategy scale does the mean FISC survey response differ significantly than the less innovative private companies. Figure 4-1 shows this clearly; the mean FISC response and the mean response from innovative firms are 2.82 and 2.67 respectively.

F. SUMMARY

This chapter provided survey results and compared them to previous innovation management research. Through the use of descriptive data analysis, correlation coefficients, F tests and Student t tests, the process extracted differentiation between the data sets. Factor analytic results level questions about the validity of the structure of Wang's model. In the next chapter, these results are discussed in the context of existing DoD organizational structure, reward systems, climate and Wang's model of innovation management will be revisited.

Table IV-VII. Descriptive Statistics And Pearson Correlations Of The Nine Scales.

Variables	Means	S.D.	1	2	3	4.	5	6	7	8
P1 Management Strategy										
1 [P1-1] Risks	2.82	0.79								
2 [P1-2] Proactive	3.01	0.71	.63**							
3 [P1-3] Organic	2.68	0.77	.06	.13						
P2 Organizational Culture										
4 [P2-1] Beliefs	3.07	0.76	.64**	.53**	-.01					
5 [P2-2] Climate	3.12	0.73	.71**	.48**	.14	.75**				
6 [P2-3] Rewards	3.43	0.69	.58**	.23	.08	.55**	.71**			
P3 Team Building										
7 [P3-1] Synthesis	2.70	0.85	.66**	.49**	-.10	.63**	.75**	.60**		
8 [P3-2] Commitment	3.10	0.77	.64**	.25	.10	.47**	.71**	.67**	.61**	
9 [P3-3] Collaboration	2.95	0.79	.61**	.29*	.17	.37**	.69**	.59**	.62**	.87**

* $p < .01$, one-tailed test
** $p < .001$, one-tailed test
(N = 58)

Table IV-VIII. Descriptive Statistics and Correlation between Items in Proposition One.

[P1] Management Strategy

Items	Means	S.D.	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14
[P1-1]: Risks																
B1	2.29	1.01														
B2	2.41	.90	.66**													
B3	3.10	1.02	.62**	.53**												
B4	3.31	.98	.58**	.55**	.67**											
B5	3.00	1.06	.51**	.48**	.45**	.42**										
[P1-2]. Proactive																
B6	3.07	.96	.39**	.41**	.49**	.27*	.45**									
B7	3.02	.74	.28*	.39**	.18	.21	.18	.49**								
B8	2.93	1.01	.47**	.59**	.57**	.34**	.48**	.68**	.48**							
B9	3.02	.95	.34**	.57**	.53**	.36**	.39**	.60**	.35**	.67**						
B10	3.00	.86	.37**	.48**	.44**	.54**	.33*	.45**	.42**	.55**	.41**					
[P1-3]: Organic																
B11	2.66	1.04	.12	-.03	-.05	.23	.16	-.01	.17	-.07	-.16	.26				
B12	2.83	.88	.08	.03	-.10	.08	.09	.14	.14	-.05	-.06	.09	.61**			
B13	2.72	.99	.51**	.51**	.53**	.56**	.54**	.53**	.15	.44**	.46**	.41**	.04	.27*		
B14	2.52	.98	.11	.03	.00	.23	.29*	.23	.13	.02	-.03	.29*	.68**	.74**	.30*	
B15	2.72	.85	-.13	-.24	-.09	-.06	-.16	-.06	.15	-.08	-.28*	.48**	.47**	.50**	.08	.45**

* $p < .01$, one-tailed test
** $p < .001$, one-tailed test
(N = 58)

Table IV-IX. Descriptive Statistics and Correlation between Items in Proposition Two.

[P2] Organizational Culture

Items	Means	S.D.	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29
[P2-1]: Beliefs																
C16	3.26	.97														
C17	2.83	1.11	.30*													
C18	3.21	.97	.26*	.39**												
C19	2.98	1.00	.26*	.68**	.57**											
C20	3.57	.68	.60**	.23	.30*	.48**										
[P2-2]: Climate																
C21	3.19	1.06	.00	.51**	.27*	.49**	.09									
C22	2.92	.86	.36**	.53**	.42**	.59**	.38**	.37**								
C23	3.29	1.01	.41**	.48**	.35**	.30*	.37**	.48**	.41**							
C24	2.84	.91	.23	.60**	.26	.61**	.17	.49**	.52**	.32**						
C25	3.34	.95	.50**	.61**	.38**	.66**	.45**	.53**	.62**	.48**	.61**					
[P2-3]: Rewards																
C26	3.76	.96	.37**	.37	.17	.29*	.30*	.20	.36**	.44**	.38**	.50**				
C27	2.97	.94	.17	.50**	.14	.56**	.25	.45**	.50**	.31*	.57**	.69**	.24			
C28	3.62	.81	.28*	.16	.15	.19	.27*	.13	.15	.18	.06	.42**	.24	.54*		
C29	3.09	1.03	.12	.23	-.11	.39**	.21	.15	.09	.11	.26	.17	.20	.19	.08	
C30	3.38	1.14	.33*	.30	.31*	.36**	.26	.42**	.41**	.48**	.50**	.51**	.41**	.43**	.23	.35**

* $p < .01$, one-tailed test
** $p < .001$, one-tailed test
(N = 58)

Table IV-X. Descriptive Statistics and Correlation between Items in Proposition Three.

[P3] Risk Taking

Items	Means	S.D.	D31	D32	D33	D34	D35	D36	D37	D38	D39	D40	D41	D42	D43	D44
[P1-1]: Synthesis																
D31	2.50	1.01														
D32	2.55	.73	.38**													
D33	2.67	1.00	.55**	.33*												
D34	2.69	1.30	.45**	.11	.64**											
D35	2.93	1.12	.24	.00	.44**	.45**										
[P1-2]: Commitment																
D36	3.00	.94	.43**	.21	.49**	.45**	.34**									
D37	3.16	.89	.42**	.19	.59**	.43**	.30*	.63**								
D38	3.36	.89	.30*	-.10	.02	.07	.03	.25	.43**							
D39	3.24	1.01	.26	.20	.31*	.39**	.31*	.70**	.46**	.27*						
D40	3.02	.93	.38*	.12	.37**	.40**	.41**	.53**	.38**	04	.59**					
[P1-3]: Collaboration																
D41	3.38	1.02	.15	.21	.33*	.42**	.27*	.68**	.41**	.02	.65**	.55**				
D42	3.24	.94	.39**	.14	.50**	.46**	.35**	.78**	.62**	.12	.71**	.64**	.81**			
D43	2.64	.87	.33*	.32*	.33*	.13	.05	.34**	.23	-.01	.40**	.42**	.37**	.41**		
D44	2.24	.96	.69**	.33*	.43**	.52**	.33*	.51**	.36**	.29*	.48**	.41**	.41**	.42**	.48**	
D45	2.95	.96	.35**	.17	.53**	.35**	.18	.60**	.60**	.06	.53**	.59**	.54**	.59**	.50**	.49**

* $p < .01$, one-tailed test
** $p < .001$, two-tailed test
(N = 58)

Table IV-XI. Descriptive Statistics And Pearson Correlations Of The Nine Scales in Wang's Survey (Both Innovative and Less Innovative Groups).

Variables	Means	S.D.	1	2	3	4	5	6	7	8
P1 Management Strategy										
1 [P1-1] Risks	2.98	0.80								
2 [P1-2] Proactive	2.92	0.73	.73**							
3 [P1-3] Organic	2.61	0.68	.29	.16						
P2 Organizational Culture										
4 [P2-1] Beliefs	2.94	0.65	.66**	.59**	.32					
5 [P2-2] Climate	2.91	0.76	.59**	.61**	.39	.70**				
6 [P2-3] Rewards	3.07	0.83	.60**	.57**	.31	.35	.62**			
P3 Team Building										
7 [P3-1] Synthesis	2.46	0.62	.43**	.60**	.22	.59**	.71**	.51**		
8 [P3-2] Commitment	2.77	0.79	.72**	.70**	.17	.62**	.83**	.59**	.79**	
9 [P3-3] Collaboration	3.00	0.70	.58**	.76**	.17	.39	.60**	.75**	.66**	.63**

* $p < .01$, one-tailed test
** $p < .001$, two-tailed test
(N = 58)

Table IV-XII. Factor Loading of All Items

	Factor 1	Factor 2
	Innovativeness	**Organic**
Eigenvalues	14.87	4.08
% of Variance	33.0%	9.1%
Variables		
B4	791	
C24	777	
C25	765	
B2	760	
C17	736	
D42	732	
C30	726	
D36	724	
C19	721	
D40	689	
D34	677	
C21	677	
D33	675	
B5	659	
D44	656	
D37	655	
B3	644	
C23	638	
D45	628	
C22	627	
B8	625	
B1	623	
D31	619	
C27	607	
D39	594	
D35	.592	
D41	.590	
B10	585	
B13	533	
B9	510	
B14		722
B11		722
B12		606
B15		.531

0.50 cutoff

Table IV-XIII. Factor Loading of Proposition One: Management Strategy [P1]

	Factor 1	Factor 2	Factor 3
	Risks/Proactive	**Organic**	**None**
Eigenvalues	5.169	2.865	1.192
% of Variance	36.9%	20.5%	8.5%
Cumulative %	36.9%	57.4%	65.9%
Variables			
B2	.770		
B13	.756		
B3	.755		
B4	.750		
B1	.746		
B6	.704		
B10	.689		
B5	.685		
B9	.671		
B14		.823	
B12		.821	
B11		.814	
B15		.744	

0.60 cutoff

Table IV-XIV. Factor Loading of Proposition Two: Organizational Culture [P2]

	Factor 1	Factor 2	Factor 3
	Beliefs /Climate	**Rewards**	**Rewards II**
Eigenvalues	5.256	1.206	0.977
% of Variance	47.8%	11.0%	8.9%
Cumulative %	47.8%	58.7%	67.6%
Variables			
B25	.874		
B19	.812		
B17	.799		
B24	.749		
B22	.743		
B27	.740		
B21	.666		
B23	.617		
B28		.812	
B26			.624

0.60 cutoff

Table IV-XV. Factor Loading of Proposition Three: Team Building [P3]

	Factor 1	Factor 2	Factor 3
	Team Building	**Commitment**	**None**
Eigenvalues	6.853	1.388	1.278
% of Variance	45.7%	9.3%	8.5%
Cumulative %	45.7%	54.9%	63.5%
Variables			
D42	.858		
D36	.844		
D39	.773		
D45	.772		
D30	.771		
D41	.754		
D37	.722		
D40	.713		
D34	.631		
D38		.665	

0.6 cutoff

Table IV-XVI. Factor Loading of the Nine Scales

	Factor 1	Factor 2
	Innovativeness	**Organic**
Eigenvalues	5.148	1.111
% of Variance	57.2%	12.3%
Cumulative %	57.2%	69.6%
Scales		
[P2-2]	.916	
[P1-1]	.851	
[P3-1]	.839	
[P3-2]	.828	
[P3-3]	.799	
[P2-3]	.782	
[P2-1]	.770	
[P1-2]	.586	
[P1-3]		.637

Table IV-XVII. F Test to Determine Equality of Means between Groups

Scales	Group I Mean	Group I S.D.	Group I Sample Size	Group II Mean	Group II S.D.	Group II Sample Size	Group III Mean	Group III S.D.	Group III Sample Size	F	p
Management Strategy:											
[P1-1] Risks	2.67	0.66	14	3.30	0.81	20	2.82	0.79	58	3.57	0.032
[P1-2] Proactive	2.76	0.53	14	3.12	0.91	20	3.01	0.71	58	1.02	0.366
[P1-3] Organic	2.47	0.69	14	2.82	0.81	20	2.68	0.77	58	0.86	0.428
Total	2.63	0.51	14	3.09	0.70	20	2.84	0.54	58	2.76	0.068
Organizational Culture:											
[P2-1] Beliefs	2.87	0.56	14	3.10	0.80	20	3.07	0.76	58	0.48	0.623
[P2-2] Climate	2.78	0.69	14	2.99	0.80	20	3.12	0.73	58	1.25	0.292
[P2-3] Rewards	2.72	0.79	14	3.28	0.81	20	3.43	0.69	58	5.3	0.007
Total	2.79	0.59	14	3.09	0.64	20	3.21	0.64	58	2.51	0.087
Team Building:											
[P3-1] Synthesis	2.19	0.44	14	2.63	0.69	20	2.70	0.85	58	2.49	0.089
[P3-2] Commitment	2.48	0.48	14	2.98	0.90	20	3.10	0.77	58	3.70	0.029
[P3-3] Collaboration	2.72	0.53	14	3.21	0.75	20	2.95	0.79	58	1.83	0.167
Total	2.46	0.42	14	2.94	0.69	20	2.92	0.72	58	2.80	0.066

Table IV-XVIII. T Test - Innovative Companies (Group I) Compared to FISCs (Group III)

Scales	Group III Mean	Group III S.D.	Group III Sample Size	Group I Mean	Group I S.D.	Group I Sample Size	t	P
Management Strategy:								
[P1-1] Risks	2.82	0.79	58	2.67	0.66	14	0.61	0.55
[P1-2] Proactive	3.01	0.71	58	2.76	0.53	14	1.12	0.27
[P1-3] Organic	2.68	0.77	58	2.47	0.69	14	0.84	0.40
Total	2.84	0.54	58	2.63	0.51	14	0.98	0.33
Organizational Culture:								
[P2-1] Beliefs	3.07	0.76	58	2.87	0.56	14	0.87	0.39
[P2-2] Climate	3.12	0.73	58	2.78	0.69	14	1.37	0.18
[P2-3] Rewards	3.43	0.69	58	2.72	0.79	14	2.72	0.01
Total	3.21	0.64	58	2.79	0.59	14	1.82	0.07
Team Building:								
[P3-1] Synthesis	2.70	0.85	58	2.19	0.44	14	2.38	0.02
[P3-2] Commitment	3.10	0.77	58	2.48	0.48	14	2.84	0.01
[P3-3] Collaboration	2.95	0.79	58	2.72	0.53	14	1.01	0.31
Total	2.92	0.72	58	2.46	0.42	14	2.23	0.03

Table IV-XIX. T Test - Less Innovative Companies (Group II) Compared to FISCs (Group III)

Scales	Group III Mean	Group III S.D.	Group III Sample Size	Group II Mean	Group II S.D.	Group II Sample Size	t	P
Management Strategy:								
[P1-1] Risks	2.82	0.79	58	3.30	0.81	20	2.06	0.04
[P1-2] Proactive	3.01	0.71	58	3.12	0.91	20	0.46	0.65
[P1-3] Organic	2.68	0.77	58	2.82	0.81	20	0.60	0.55
Total	2.84	0.54	58	3.09	0.70	20	1.19	0.24
Organizational Culture:								
[P2-1] Beliefs	3.07	0.76	58	3.10	0.80	20	0.13	0.90
[P2-2] Climate	3.12	0.73	58	2.99	0.80	20	0.57	0.57
[P2-3] Rewards	3.43	0.69	58	3.28	0.81	20	0.66	0.51
Total	3.21	0.64	58	3.09	0.64	20	0.58	0.57
Team Building:								
[P3-1] Synthesis	2.70	0.85	58	2.63	0.69	20	0.32	0.75
[P3-2] Commitment	3.10	0.77	58	2.98	0.90	20	0.50	0.62
[P3-3] Collaboration	2.95	0.79	58	3.21	0.75	20	1.15	0.25
Total	2.92	0.72	58	2.94	0.69	20	0.09	0.93

V. DISCUSSION

A. RESULTS OF THE PROPOSITIONS

There is a recurring theme throughout this analysis that significantly differentiates DoD from private companies. DoD is attempting to recapitalize the force structure through "right-sizing" the infrastructure while private companies continue to grow under favorable economic conditions. Figure 5-1 displays the stark contrast in the

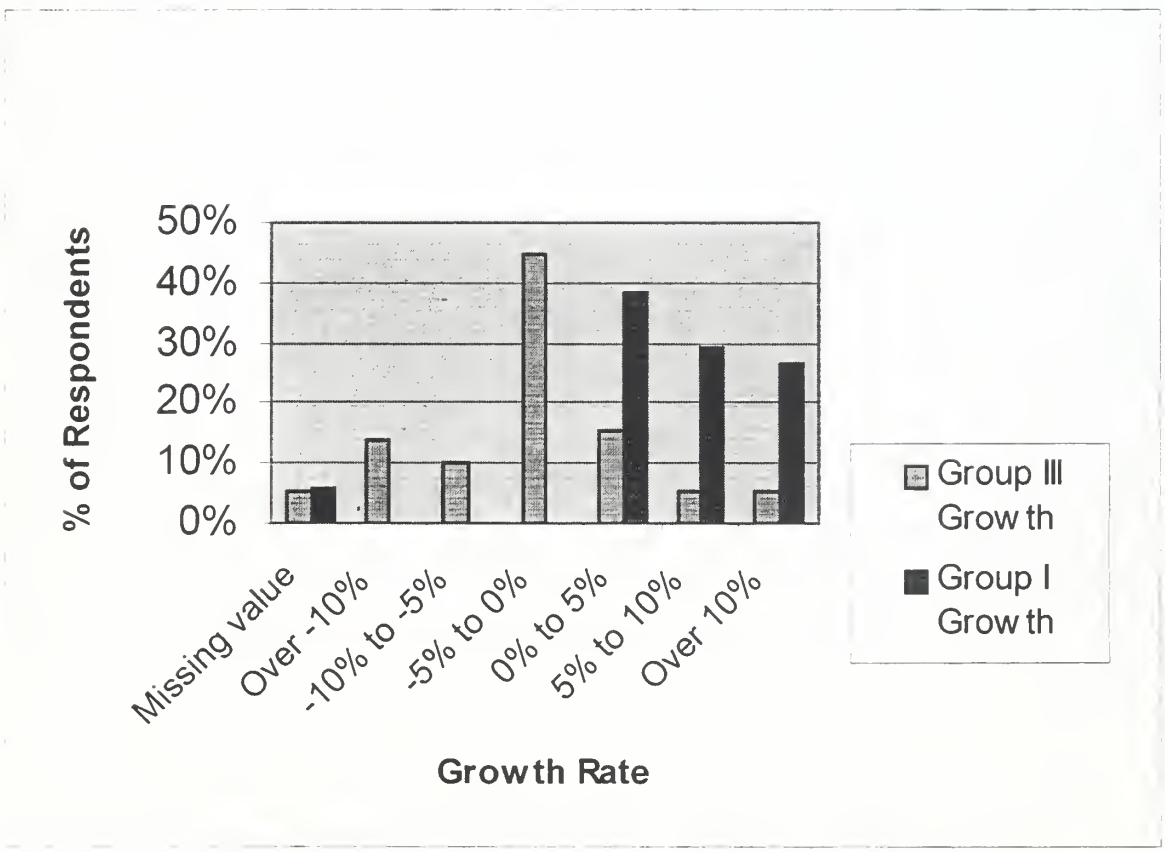


Figure 5-1. Growth of FISCs Compared to Innovative Companies.

responses of the two survey groups. This situation hinders the DoD's ability to maximize innovation. The reduction in funding and manning has not been coupled with a reduction in requirements. The same workload is being borne by a smaller workforce. This creates a situation where workers are forced to focus on day-to-day operations and affords them little time produce innovative products and services.

1. RESULTS RELATED TO PROPOSITION ONE

Proposition 1 yielded the only response that could not be aligned with less innovative public companies. In the risks sub-scale, the responses were aligned with innovative companies. This indicates that military leadership is receptive to taking risks and trying new ideas. These results mesh with the generalization that in DoD organizations that possess civil servants and military leadership, the military personnel are thought of as "change agents" and the civil servants are thought of as the possessors of the "corporate" knowledge who are responsible for the day-to-day operations of the organization. Military leadership turns over quickly, and they are graded on their ability to formulate a better, faster, cheaper organization/product/service. As a result,

those in positions of power strive to "champion" innovations that will improve the organization and cast them in a favorable light.

However, the tight fiscal environment has an effect on the organization's risk taking. The downsizing plan requires a streamlined logistics system. Simply put, the size of the logistics system is shrinking. Downsizing can leave organizations with an atmosphere of mistrust and insecurity—an atmosphere hardly conducive to personnel deviating from the straight and narrow. Downsizing may unclutter the organization chart, but it may also eliminate enclaves that harbor some creative contributors. One of the most immediate consequences of large-scale cutbacks is reduced morale among the survivors. While stripping away excess management can potentially make an organization more hospitable to innovation, it will not happen just by changing the structure. The surviving managers may feel too insecure to deviate from the "corporate" norm [Tomasko, 1987].

In response to the question, "top-level decisions made at our organization are characterized by an active search for new opportunities," one respondent agreed but added,

> Efforts are limited by declining resources; policies/guidance issued by higher authority and conflicting program directions (e.g., regionalization, outsourcing, reengineering, etc.)

In this survey, the risk taking associated with the frequent "fresh blood" of leadership is significantly different than that of less innovative companies.

2. RESULTS RELATED TO PROPOSITION TWO

Proposition 2 resulted in the largest disparity between the FISC responses and those from innovative companies (see Table IV-XVIII). Specifically, the rewards sub-scale produced the highest mean on the survey. Responses to item 26, "Our organization has a pay structure which links effort, accomplishment, and reward in such a way that all employees perceive that entrepreneurial activities are not only allowed but also encouraged," was the question with the highest mean (3.76).

The reward system of the DoD does not have the latitude to reward innovative behavior; one respondent summarized it well:

> Civil Service is a tenure-based system that rewards longevity making it difficult to balance the workforce with young executives fresh with new ideas. The end result is an aging workforce that has little time to be innovative as they try to survive the current pressures to downsize while balancing daily professional requirements.

Bureaucracies view team rewards as unnatural and unfair. It is the perspective of the bureaucracy that it is unfair if a good worker is penalized because he/she was involved in a project that failed. Of course, team rewards try to avoid that by ensuring that the team produces the desired results and succeeds [Pinchot, 1993]. One respondent wrote that the FISC did,

> Encourage team recognition, however, cash award scales based on team recognition are very restrictive. To get around the monetary limits imposed for team awards, (they) have granted individual cash awards with group recognition. We do not have funding/flexibility to grant meaningful cash awards.

As discussed in the previous section, military leadership has been provided an extrinsic reward (of a favorable fitness report). The bureaucracy has established a reward system that is based on longevity instead of accomplishment. This system needs revision to foster innovation.

3. RESULTS RELATED TO PROPOSITION THREE

The greatest difference between the means of the FISCs and innovative companies was in the proposition of team building (Table IV-XVIII). The means in the synthesis and

commitment sub-scales were significantly different from those of innovative companies, and all three sub-scales were higher than the means from Group II. This indicates that the FISCs are not as innovative as the group of less or non- innovative companies in the areas of synthesis, commitment and collaboration.

a. Synthesis

The mean of the synthesis sub-scale was the second lowest mean of the nine generated by the FISC survey. Although the respondents perceived that they accomplish innovation through synergistic teams, the FISC mean (2.70) was still significantly different (higher) than that of the innovative group (2.19). This was the lowest mean for Group I and reinforces the need for cross-pollination to nurture innovation and achieve success in organizations.

The five FISCs that are involved in this research possess the organizational structure of a Weberian bureaucracy. It has a hierarchy of authority in which each individual is accountable to his superior for his subordinates' actions; there is a clear cut division of labor; there is a system of rules to ensure uniformity of

tasks; individuals carry out their tasks in an impersonal way, and employment within the organization is determined on the basis of technical qualifications and constitutes a career [Weber, 1947]. Figure 5-2 is the organizational structure for FISC San Diego; all of the FISCs are similarly structured.

There are several characteristics of a bureaucracy that limit an organization's ability to innovate. Thompson indicated that

> the monocratic concept of a bureaucracy centralizes the decision-making authority and makes the assumption that the strategic apex is omniscient and issues all orders in the organization [Thompson, 1969];

It also requires reliance on standards and rules to operate. These restrictions stymie creativity.

b. Commitment

One of the three Core Values in the Navy is commitment. Navy personnel are to "be committed to positive change and constant improvement [U.S. Navy, online]." It is logical to assume that the Navy's supply system would perceive itself favorably with regard to its commitment to accomplish a written objective, such as innovation. The survey did not reveal that result. In the

sub-scale of commitment, Group III's mean (3.10) was significantly higher than Group I's (2.48). One respondent wrote that "…leadership roles change frequently in military organizations" in response to the question of whether or not "top management has committed visionary leaders who are willing to initiate and sustain effort on the basis of faith in an innovative idea." This echoes the sentiments expressed in the comments that pertained to risk taking. The leadership is willing to embrace the additional risk required to foster innovation, but their rapid turnover brings new proprietary ideas to be implemented making implementation difficult.

Source: Fleet and Industrial Supply Center San Diego (online)

Figure 5-2. Organizational Chart of FISC San Diego.

B. MODEL OF INNOVATION MANAGEMENT REVISITED

At the conclusion of Wang's research, he revised his model of innovation management by removing the organic sub-scale and recognizing that the other 8 sub-scales are closely interrelated to innovativeness. The new model based on this study is depicted in Figure 5-4.

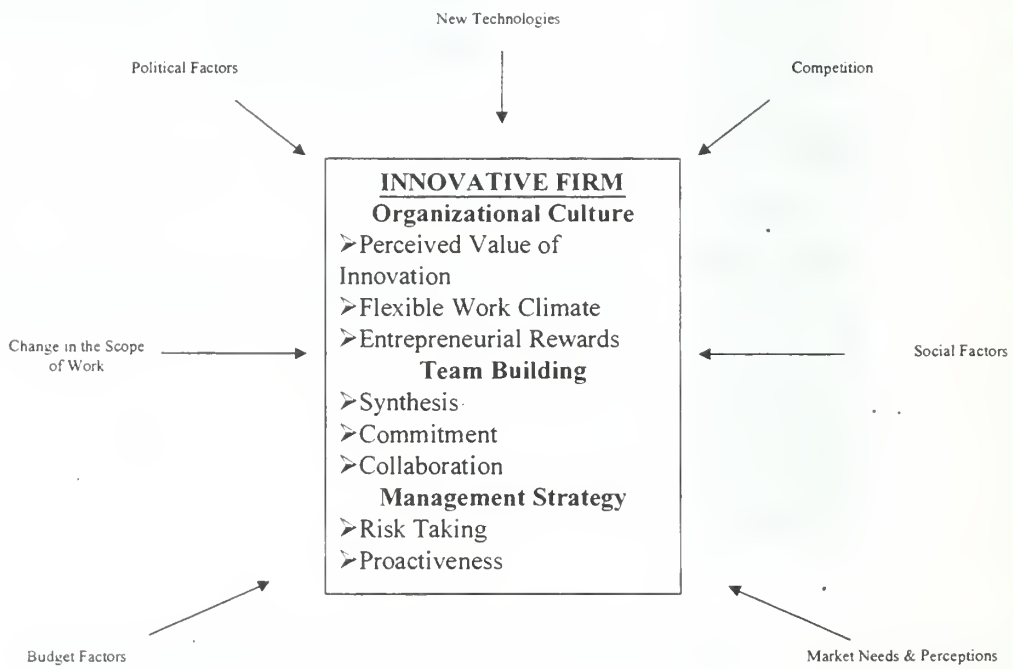


Figure 5-3. Revised Model of Innovation Management.

The correlation of the sub-scales was similar to those in Wang's research. The organic sub-scale did not show significant correlation to the management strategy proposition or the other sub-scales in either study. Wang

concluded that an organic structure is not necessary for a company to produce innovative products/services, but the organizations must exhibit flexible organizational structures that allow the other innovative factors to manifest themselves. Since Wang's work was targeted at relatively mature companies (a market capitalization in excess of $100M), and this survey was targeted at a governmental bureaucracy, it is reasonable that the organic sub-scale did not correlate with the other innovative factors.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The primary research question posed by this thesis was how innovative is Naval Supply Systems Command? The results of this research indicate that the Navy supply system is not as innovative as private companies that have received accolades for innovativeness. Additionally, NAVSUP is not as innovative as private companies that are less or non-innovative. NAVSUP may be an innovative public organization, but in the context of this comparison to private companies it did not compare favorably.

Two things are clear. If, NAVSUP wants to be an innovative organization, it must undergo a transformation to align itself with the characteristics of innovative private organizations.

1. A DESIRE TO BE INNOVATIVE

Many sections of the military wish to innovate and change rapidly.

> The knowledge is there. The need to innovate is clear. But unless they implement entrepreneurship and innovation into their organizations, they will be superseded by external organizations that will create rival entities and render the existing ones obsolete [Drucker, 1985].

This is prophetic for DoD considering the pressure that it is under to embrace innovation or face the elimination of all non-mission enhancing tasks.

The supply system's willingness to embrace risk could be a precursor of the organization's progression towards developing the characteristics required to establish an environment conducive to innovation. At a minimum, it does indicate that DoD possesses leadership that is willing to take risks. This may enable DoD to move the remaining seven sub-scales of innovativeness into alignment with innovative private organizations.

2. THE PROCESS OF BECOMING AN INNOVATIVE ORGANIZATION

Public organizations have to be more innovative in the future as increased public scrutiny demands the efficient use of public funds in conjunction with the additional competition from outsourcing and privatization. Thankfully, a large body of work has been written about the process of making organizations more innovative. In particular, Wang's model is useful as a diagnostic tool to help managers assess their organization's innovativeness. His model also can help organizations begin the

transformation process. Managers can target areas (or sub-scales) for improvement and monitor their progress in those areas over time. The literature is also clear that certain changes need to be made to launch the transformation effort. Three are particularly important and are discussed below as they pertain to NAVSUP.

a. People to Spearhead Change

NAVSUP could charge specific people with the responsibility of anticipating change. Organizations tend to make the strategic apex responsible for visionary, innovative thinking, but the innovation that will become tomorrow's business practices are not likely to come from the line managers. Personnel that work closely with customers should be identified as the "point people" for initiating change [Robert, 1988]. This would combat the perception that the future of the organization is solely the responsibility of the ever-changing leadership. For example, if a civilian line manager is tapped to be responsible for the development of innovation, then the ideas can start to percolate from below. By assigning someone the responsibility of being innovative, you institutionalize the flex that was available when the

organization was larger. This initiative would reinforce the organization's long range commitment to innovation.

b. Sustained Commitment To Innovation through Strategic Planning

Top leadership's commitment to innovation is imperative if it is to be a priority for the entire organization. An effort should be made to develop a ten-year plan for the Navy's supply system that highlights innovation as a priority. All personnel that will be in positions of leadership during the next ten years (O-5, civilian equivalent and above) should participate in the formulation of such a strategic plan. This would eliminate the need for each new leader to institute his/her personal vision of how to be innovative. In tandem with the establishment of change champions, this new direction also will reinforce the Navy's commitment to innovation.

c. Reward System

NAVSUP needs to be an advocate of revamping the civilian pay structure to transform the government into a more nimble organization. It is impossible for the government to compete with private industry for functionalities that can be outsourced if they must try to

energize the labor force with an archaic pay structure that rewards longevity instead of personal and team accomplishments.

B. WANG'S MODEL AND APPROACH

Wang's approach to the study of innovativeness appears to be sound. The resulting differentiation in the scales between innovative and less or non-innovative companies in his study provided a yardstick upon which comparisons could be made. However, future studies should continue to test this new model to determine if it characterizes the management of innovation in public organizations.

C. LIMITATIONS

The small sample size of Wang's study (N=34) and this study (N=58) was a limitation. Since Wang used winners of the Canada Awards of Business Excellence to define his innovative companies, the sample size of innovative companies was small. Since this study used only five FISCs, the sample size was also small.

Another limitation is that the FISCs were designated as representatives of Naval Supply Systems Command. Although the FISCs are the "flagships" of NAVSUP, polling

additional commands could have yielded a broader sense of innovation throughout NAVSUP.

C. SUGGESTED FURTHER STUDIES

This exploratory study has only begun to develop a growing body of knowledge on innovation management in DoD. Since this is a comparative analysis between public and private, innovative and less innovative organizations additional studies could be conducted on the many permutations and combinations of these four categories of organizations. The following is a list of topics that would be useful follow-on studies into the management of innovation:

- Conduct another survey comparing NAVSUP organizations against other public/DoD organizations to determine the degree of innovativeness that exists in NAVSUP in relation to other public entities.
- Expand future studies to include additional NAVSUP/DoD organizations.
- Investigate the interrelation of the organic sub-scale with innovation. The application of this survey to start-up companies, emerging technology,

or companies with small capitalization may yield differing results from what was determined by this thesis and Wang's study.

- Investigate the "quality" and value of the types of changes that were made to innovative output (products/services).
- Research the impact of the constant churn of leadership. Specifically, how it effects commitment and risk taking.

APPENDIX A. CORRESPONDENCE

Date: 10/19/98 1:29:03 PM Pacific Standard Time
From: CAPT_RICK_VIZZIER@fmso.navy.mil (CAPT RICK VIZZIER)
To: KEITH_B_FARGO@navsup.navy.mil (KEITH B FARGO), Gordon_W_Hansen@navsup.navy.mil (Gordon W Hansen), TIMOTHY_S_TRAAEN@navsup.navy.mil (TIMOTHY S TRAAEN), Patrick_A_Tillson@navsup.navy.mil (Patrick A Tillson), Tilsonp@n4.opnav.navy.mil (Cdr P Tilson), David_J_Graff@navsup.navy.mil (David J Graff), LSU88@aol.com

XOs---I am forwarding Carl Weiss email--he needs our help so he can finish his thesis for PG school---remember when you had to do that---Carl is a great guy so if you can get some of your people to fill this out it would be great---thanks,
Viz

_____ Forward Header
_____
Subject: SURVEY
Author: LSU88@aol.com at internet-emh1
Date: 10/15/98 1:11 AM

I am conducting a research study for my Master's thesis at the Naval Postgraduate School in the area of innovation management in Naval Supply Systems Command. The intent of the study is to collect relevant information to identify the characteristics of innovation at the FISCs and do a comparative analysis with research previously done on innovative private companies. It is expected that the results obtained will help FISC to become more innovative. CDR Brown at NAVSUP has approved this survey request.

I would like to have twenty surveys filled out by each FISC. If possible, priority should be given to respondents that have recently been involved with a project of an innovative nature. The responses will be treated as confidential and anonymity is guaranteed. Please direct the questionnaires to the appropriate persons and have them complete the surveys at their earliest convenience and

return them back to me via e-mail at cfweiss@nps.navy.mil NLT 28 OCT 98. Ideally, the data call will be conducted by e-mail exclusively. Completion of a survey takes approximately 10-15 minutes. An executive summary of the findings will be forwarded to all participating commands once the research has been completed. Thank you for your time and cooperation.

The purpose of this thesis is to provide a comparative analysis between the management of innovation in the strategy, structure and climate of private companies with the DoD logistics system. This will be accomplished by measuring the perceptions of professional DoD logisticians and comparing it with results from a study that quantified the perceptions of leaders in private companies that were recognized as innovative. By analyzing the differences and similarities, potential modifications to the organizational strategy, structure and climate can be identified to achieve an environment in DoD that is conducive to innovation.

The survey is attached to this e-mail. Thank you for your assistance.

Very respectfully,
LCDR Carl Weiss, SC, USN
cfweiss@nps.navy.mil
(408) 375-5341

APPENDIX B. SURVEY

Name of organization:
Address:
City, State, Zip code:
Name & Title:
Telephone number:
e-mail address:

Notes:

(i) This questionnaire is designed to gather information about your organization's management strategy, organizational culture, and impact on various levels in the management of innovation. No questions of a personal nature are asked, nor is any proprietary information requested.

(ii) The questionnaire is to be filled out by a member of the organization that has adequate familiarity with the services provided by the organization and its external environment.

(iii) All of the questions are rating scales. Please X out the number in each scale that seems closest to describing the reality, as you perceive it. Feel free to make any additional explanatory or qualifying comments under the relevant question or at the end of the questionnaire.

(iv) Please answer all the questions, as incomplete questionnaires create severe problems in data analysis. After completing the questionnaire, please check that no questions are left unanswered.

(v) The information supplied in this questionnaire will be kept in the strictest confidence, and will not be divulged to anyone except in aggregate form and for bona fide research purposes.

(vi) An executive summary from the findings of this study will be made available to all participating organizations.

(vii) Once you have completed the questionnaire, please return it via e-mail to cfweiss@nps.navy.mil.

Part A

1. Command you work for: _____

2. Total number of employees (in your command):

Less than 200: _____
200 to 400: _____
401 to 600: _____
601 to 800: _____
over 800: _____

3. Annual operating budget (of organization):

Less than $1M: _____
$1 to $5M: _____
$5 to $10M: _____
$10M to $15M: _____
over $15M: _____

4. Approximate average annual growth rate in the size of the organization in the past 5 years:

over -10%: _____
-10% to -5%: _____
-5% to 0%: _____
0% to 5%: _____
5% to 10%: _____
over 10%: _____

5. Approximately how many successful new products/services (i.e., those involving changes resulting from development work) has your organization introduced in the last two years?

0 to 2: _____
3 to 7: _____
8 to 15: _____
16 to 30: _____
over 30: _____

6. The changes resulting from development work of these new products/services have been...

_____ Mostly of a minor change
_____ Divided between those of a minor change and those of a major change
_____ Mostly of a major change

PART B

The following statements are meant to identify the collective management strategy of your organization's key decision-makers rather than any one individual's management strategy or philosophy.

Please indicate by placing an X by the appropriate number (as described by the following scale) the extent to which the following statements characterize the management strategy of your organization's top mangers.

1- Strongly agree
2- Agree
3- Undecided
4- Disagree
5- Strongly disagree

1. The operating philosophy of the top management of our organization strongly emphasizes new products/services, technological leadership and innovation (with less dependence on the marketing of tried and true services).

1- _____
2- _____
3- _____
4- _____
5- _____

2. Top level decisions made at our organization are characterized by an active search for new opportunities (in market, technology, etc.).

1- _____
2- _____
3- _____
4- _____
5- _____

3. Top managers at our organization are inclined to take business-related risks, that is, making bold decisions despite the uncertainty of their outcomes.

1- _____
2- _____
3- _____
4- _____
5- _____

4. Top management at our organization can be described as having a tendency to high-risk, high-return endeavors.

1- _____
2- _____
3- _____
4- _____
5- _____

5. Our organization is more concerned with stability rather than innovative activities.

1- _____
2- _____
3- _____
4- _____
5- _____

6. Our organization is often the first to introduced new products/services on the market.

1- _____
2- _____
3- _____
4- _____
5- _____

7. Our organization typically initiates actions that other organizations initiate then respond to.

1- _____
2- _____
3- _____
4- _____
5- _____

8. With respect to technological innovation, our organization generally practices proactive planning (as opposed to reactive).

1- _____
2- _____
3- _____
4- _____
5- _____

9. It takes a long time for entrepreneurial initiatives to obtain support and resources from our top management.

1- _____
2- _____
3- _____
4- _____
5- _____

10. Our organization is actively seeking data on the external environment (e.g. social, economic, political) and making effective use of it.

1- _____
2- _____
3- _____
4- _____
5- _____

11. Our organization depends on informal relations and norms of cooperation for getting work done.

1- _____
2- _____
3- _____
4- _____
5- _____

12. Our organization philosophy tends to emphasize on getting things done even if this means disregarding formal procedures.

1- _____
2- _____
3- _____
4- _____
5- _____

13. Top management of our organization adapts to changing circumstances without too much concern for past practices and principles.

1- _____
2- _____
3- _____
4- _____
5- _____

14. At our organization, the mangers' operating styles are allowed to range from the very formal to the very informal.

1- _____
2- _____
3- _____
4- _____
5- _____

15. There is a tendency for managers at our organization to let the requirements of the situation and an individual's personality define proper on-the-job behavior in the development of innovative services.

1- _____
2- _____
3- _____
4- _____
5- _____

PART C

Note: The usage of the word intrapreneur in the following sections denotes an entrepreneur who operates within existing organizations. Very often, this creative person takes an idea and runs with it, the intention of turning the idea into a "marketable" service.

16. Our organization emphasizes innovation and the introduction of new products/services more than maintaining efficiency of existing operations.

1- _____
2- _____
3- _____
4- _____
5- _____

17. In our organization, innovations are generated from the cross-fertilization of ideas from different departments and various levels.

1- _____
2- _____
3- _____
4- _____
5- _____

18. Our organization allows creative mavericks (intrapreneurs) to engage in activities outside the regular channels of hierarchical decision-making.

1- _____
2- _____
3- _____
4- _____
5- _____

19. Top management is committed to innovative activities to the extent that mistakes and failures are expected.

1- _____
2- _____
3- _____
4- _____
5- _____

20. It is expected at our organization that intrapreneurs be willing to put their reputation and even their career on the line in order to pursue new opportunities.

1- _____
2- _____
3- _____
4- _____
5- _____

21. Our organization provides an open work environment by stressing colleague-based rather than boss-subordinate relationships.

1- _____
2- _____
3- _____
4- _____
5- _____

22. Our organization allows for mutual adjustment and flexibility in motivating intrapreneurs, i.e., they can go beyond the limits of their formal position.

1- _____
2- _____
3- _____
4- _____
5- _____

23. Our organization utilizes "executive champions" who act as mentors in supporting and sponsoring intrapreneurs by cutting through "the politics and red tape" that can delay a project.

1- _____
2- _____
3- _____
4- _____
5- _____

24. The originator or leader of an innovative project is permitted to "run with it" from start to finish.

1- _____
2- _____
3- _____
4- _____
5- _____

25. Our organization encourages self-motivated, achievement-oriented intrapreneurs to work in "unchartered waters" and experiment freely.

1- _____
2- _____
3- _____
4- _____
5- _____

26. Our organization has a pay structure which links effort, accomplishment, and reward in such a way that all employees perceive that entrepreneurial activities are not only allowed but also encouraged.

1- _____
2- _____
3- _____
4- _____
5- _____

27. In our organization, intrapreneurs are evaluated on the achievement of an objective, and not on how the task (innovation) is accomplished.

1- _____
2- _____
3- _____
4- _____
5- _____

28. Our organization provides a dual ladder system whereby intrapreneurs can advance on the technical side of the ladder, assuming additional responsibilities for technologies instead of employees or budgets.

1- _____
2- _____
3- _____
4- _____
5- _____

29. Our organization gives team rewards and considers them more important than rewards for individual team members.

1- _____
2- _____
3- _____
4- _____
5- _____

30. Our organization provides meaningful rewards that are conducive to innovative behavior.

1- _____
2- _____
3- _____
4- _____
5- _____

PART D

Note: Remember that this feedback will be held strictly confidential and anonymity is guaranteed. Please respond to the questions as honestly and candidly as possible.

31. Our organization often brings together people from appropriately selected fields (such as contracting, transportation, personnel, etc.) in order to increase the scope and success of innovation.

1- _____
2- _____
3- _____
4- _____
5- _____

32. At our organization, the human resources in innovation management is more based on the response to the different conditions than on the result of a consciously planned organizational process.

1- _____
2- _____
3- _____
4- _____
5- _____

33. Our organization emphasizes information-sharing and input-seeking from others - that is, asking for ideas about users' needs, soliciting suggestions from subordinates, welcoming peer review, and so forth.

1- _____
2- _____
3- _____
4- _____
5- _____

34. Our organization endorses close, team-oriented working relationships and commitment to joint goals.

1- _____
2- _____
3- _____
4- _____
5- _____

35. Our organization lacks integration of entrepreneurial, managerial, and technological roles (or skills).

1- _____
2- _____
3- _____
4- _____
5- _____

36. Top management at our organization is conscious not to become complacent after a few successful innovations by continually providing the resources, and accepting the necessary risks for new development.

1- _____
2- _____
3- _____
4- _____
5- _____

37. Our top management has committed visionary leaders who are willing to initiate and sustain effort on the basis of faith in an innovative idea.

1- _____
2- _____
3- _____
4- _____
5- _____

38. The investment of financial resources in innovative projects at our organization does not have to show a short-term return.

1- _____
2- _____
3- _____
4- _____
5- _____

39. Our organization's commitment to new innovative services is both enduring and consistent, that is, it is maintained through periods when funding is constrained.

1- _____
2- _____
3- _____
4- _____
5- _____

40. Our organization demonstrates a strong business focus through a clear set of priorities that encourages innovation.

1- _____
2- _____
3- _____
4- _____
5- _____

41. At our organization, every major innovation has an executive champion (sponsor) who interfaces between management and the intrapreneurial team, removes organizational barriers, provides feedback, and gives timely advice.

1- _____
2- _____
3- _____
4- _____
5- _____

42. At our organization, the cooperation of the top management, executive champions, and intrapreneurial (project) teams can be seen in all our major innovations.

1- _____
2- _____
3- _____
4- _____
5- _____

43. Our organization usually requires functional specialists and product/market managers to interact.

1- _____
2- _____
3- _____
4- _____
5- _____

44. The innovations at our organization are based more on teamwork than individual activities.

1- _____
2- _____
3- _____
4- _____
5- _____

45. One of the primary roles of the top management at our organization is to keep the organization entrepreneurially oriented.

1- _____
2- _____
3- _____
4- _____
5- _____

PART E

Feel free to write any comments:

THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION!
Please return the survey to cfweiss@nps.navy.mil

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